Management of Change and Pre-startup Safety Review



Management of Change Purpose

Establish a formal written mechanism for ensuring that changes do not degrade the safety that was purposefully designed into the original process operation.

Management of Change Chemical Changes

- Material quality
- Product quality

Technology Changes

- Increase in chemical inventory
- Equipment unavailability
- Change in operating conditions outside of operating limits

Management of Change Equipment Changes

- Staffing/reorganization
- Decommissioning equipment
- Substitution of materials
 - Piping, gasket and seal with diff material
 - Vessel w/ one of diff pressure rating or size
 - Control valve with diff size
 - Mineral oil lubrication system to synthetic oil lubrication
- New installation
 - Bypass around equipment
 - Parallel equipment (standby pump)
 - Field mounted local pump control panel w/ programmable logic controller
 - Compressor, evaporative condenser

Management of Change Procedure Changes

- Standard operating procedures
- Preventative maintenance
- Inspection and testing
- Emergency operating
- Training
- Company policies

Management of Change Facility Changes

- Emergency back-up systems
- Power supply system
- Plant security
- Fire detection and prevention system
- Adjacent processes/equipment
- Plant utilities and construction offices
- Traffic patterns, speed limits and egress routes

Management of Change Evaluate beforehand

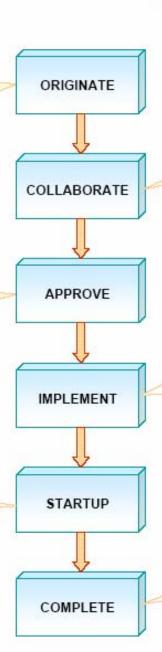
- Technical basis for the proposed change
- Impact on safety and health
- Impact on operating procedures
- Time period for the change
- Authorization requirements for the proposed change
- All affected employees informed of and trained in the change prior to start-up
- Updated process safety information

MANAGEMENT OF CHANGE (MOC) PROCESS

Prepare Change Proposal listing Type (Temporary/Permanent), PSM or Non-PSM, Priority, Technical Basis, Safety/Environmental impact, Attachments, Equipment affected, Implementation tasks & order, etc.

Final Approval by selected people in selected order. Proposal voided if disapproved. Can be resubmitted with recommended changes.

Final review by Implementation Manager. Ensure all Critical tasks, Notifications and training have been completed. MOC can still be voided and recycled.



Selected people (simultaneously or in order) review Change Proposal and add/edit/review theirs & others' comments up to requested date.

Complete required Implementation tasks (studies and reviews, forms and checklists, update process and safety documents, training, etc.) in selected order. Pre-Startup Safety Review and Notifications are Critical tasks. Non-critical tasks can be completed after Start-up.

Close out MOC for recordkeeping.
All Non-critical tasks, training and
action items must be completed. Can
be used as training content in future.

Management of Change Importance Flixborough, England 6-1-74

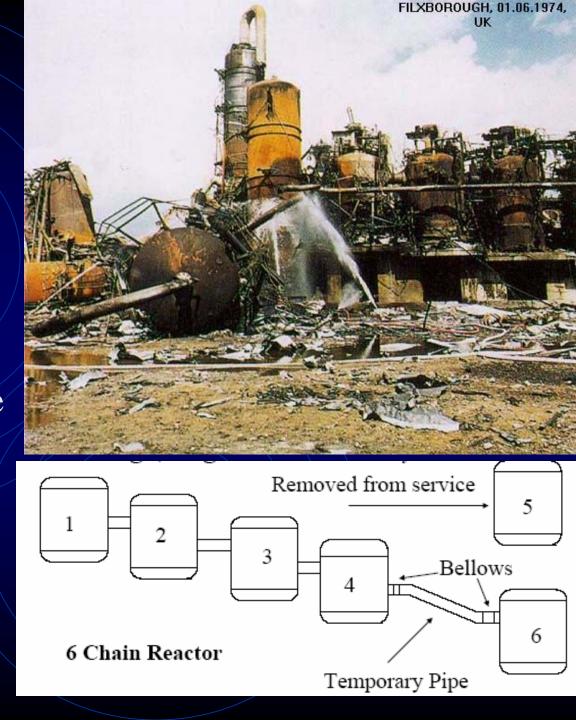


- Substandard bypass installed w/out safety review
 - No pressure testing
 - Pipe supports not adequate for over flexing
- Excessive inventories of cyclohexane

40 tons of volatized product released & ignited

Flixborough, England 6-1-74

- 6 gravity fed reactors
 - 20 tons each
- Reactor 5 removed due to structural crack
- Reactors 4 & 6
 connected via 20" pipe
 & flexible connecting
 bellows
 - 28" spec pipe not in stock





- Distillation tower flooded w/ hydrocarbons causing release from vent stack & explosion during restart
- 15 killed, 180 injured



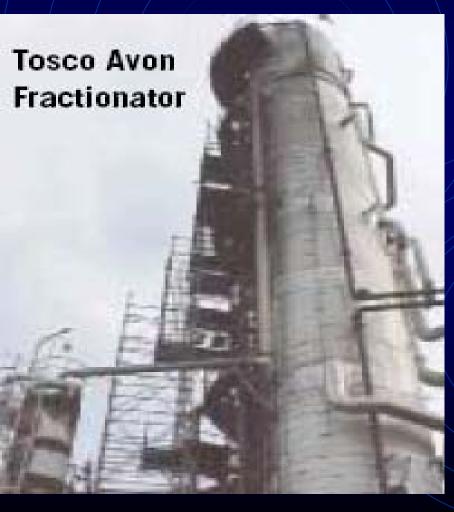
Management of Change Importance BP Texas City 3-23-05

- No MOC for trailer placement next to isomerization unit.
- No MOC when operators set alarm set points
- No MOC for raffinate startup allowed although pressure control valve wasn't operable.
- No MOC training for previous 2 yrs although significant personnel turnover
- No MOC for change to prestartup operating procedures





Management of Change Importance Martinez, CA 2-23-99



- No MOC when piping & valves were replaced on oil fractionator
- Process continued and napthalignited killing 4
- Shut-off valves malfunctioned
 & drain valves were clogged
- No MOC for operational changes to the desalter beyond design specs that created corrosive conditions

Pre-startup Safety Review

- For new facilities
- For modified facilities where a change is needed to the process safety information

Pre-startup Safety Review Evaluate beforehand

- Construction & equipment is in accordance w/ design specs
- Safety, operating, maintenance, & emergency procedures are in place & adequate
- PHA has been performed and recommendations resolved for new facilities
- Modified facilities meet the requirements contained in MOC
- Training has been completed for employees involved in operating the new process

References

- API Management of Process Hazards, Recommend Practice 750
- ORC Recommendations for Process Hazards
 Management of Substances with Catastrophic Potential
- AICHE Center for Chemical Process Safety
 - Guidelines for Technical Management of Chemical Process Safety
 - Guidelines for Auditing Process Safety Management Systems
- CMA
 - Managing Process Changes, A managers' guide to implementing & improving management of change systems
 - Responsible Care Initiative Process safety code of management practices; Management Practice #10